

THERE IS CLAIMED:

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a1
1. A multichannel wavelength-division multiplex fiber optic transmission system including an optical transmitter and an optical receiver connected by an optical line including at least one optical fiber and at least one set of channel regenerators, wherein successive regenerators regenerate respective groups of channels forming a subset of said set of channels.
2. The system claimed in claim 1 wherein the number of successive regenerators is a submultiple of the number of regenerators.
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3. The system claimed in claim 1 wherein each group includes only one channel.
4. The system claimed in claim 3 wherein each regenerator is an optical regenerator.
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5. The system claimed in claim 1 wherein at least one group includes two channels.
6. The system claimed in claim 4 wherein each regenerator for regenerating a plurality of channels includes means for synchronizing the channels to be regenerated and an optical regenerator unit.
7. The system claimed in claim 4 wherein each regenerator includes a synchronous modulator.
8. The system claimed in claim 1 wherein each regenerator includes a demultiplexer and a multiplexer to process independently channels which are to be regenerated and channels which are not to be regenerated.
9. The system claimed in claim 1 wherein each regenerator includes an inserter/extractor system for isolating channels to be regenerated.
10. The system claimed in claim 1 wherein each regenerator includes a compensator amplifier for compensating intensity differences between regenerated and non-regenerated channels.
11. A system as claimed in claim 1 further including supervisory means using a dedicated channel.
12. The system claimed in claim 11 wherein each regenerator includes means for separating said dedicated channel from the other channels, a supervisory unit for transmitting information relating to the status of said regenerator on said dedicated channel and means for remultiplexing said dedicated channel with the other channels.
13. The system claimed in claim 12 wherein each regenerator includes a regenerator unit for regenerating the channels of a group of channels and the

supervisory unit receives information from said regenerator unit and a portion of the regenerated signal delivered by said regenerator unit.

14. A system as claimed in claim 1 further including a plurality of spaced optical amplifiers and a plurality of spaced optical regenerators, wherein the spacing of said optical regenerators is a multiple of the spacing of said optical amplifiers.